CAAD as a Dialogic Tool.

A Report on an Environmental Project at St Francis Primary School, Gorbals.

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The paper describes how CAAD (in particular 3D modelling) can be used as a dialogic tool within a community context. It demonstrates the creative potential of visual presentation techniques as part of an environmental project that engaged people of different ages and experience involved in the urban regeneration process.

Introduction

Located on the River Clyde, to the south of Glasgow old town (Figure 01), the Gorbals has been the subject of a number of development plans. The Gorbals, or Bridge-end, first provided Glasgow with its Leper Colony on the edge of the city, and has continued to remain in the shadow of the growing city of Glasgow ever since. The area experienced a huge increase in population due to the rapid industrial expansion that Glasgow experienced at that time. The site was the focus of early speculative projects in the 19th century, being associated with the Trades House and Hutcheson Hospital.
In the wake of the rapid growth of Glasgow in the 19th century, Hutchesontown and Laurieston were developed. The latter, with its elegant frontage facing onto the river was thought to be an answer to the needs of the emerging middle class. This speculative venture went wrong with the building of the ironworks at Dixon Blazes and the new railways that served the growing industry on the southside. The elegance gave way to overbuilding and overcrowding that saw population grow to its highest of 85,000 by the 1930's. By that time the Gorbals, or at least its infamous media reputation, was synonymous with urban decay. Today the population has dropped to only 9,300.

Statistics indicate a thriving community assimilating a succession of immigrant groups such as Irish, Jews and Lithuanians. Backcourts became crammed with small scale industries and houses were sub-divided, producing desperate overcrowding. Those that could afford it moved out leaving the property to decline to such an extent that by the 1950's most of the housing was considered unsuitable for habitation and the Gorbals became the subject of a comprehensive redevelopment plan. (Smart, *Villages of Glasgow Volume 2*).

The Gorbals Annual Report 1995 and Strategic Framework recognises that the solution to the present challenges cannot be found in economics alone, but should be addressed through a cultural and economic strategy.

The Bellarmine Arts Association, a voluntary arts organisation, was invited to contribute at a local level to the regeneration process by architects who had a leading role in the Gorbals programme. This includes development of public and private housing, commercial and recreational facilities as well as improvement to public places throughout the Gorbals.

The success of a previous collaborative school and health project involving Bellarmine Arts Association and the CADET Unit of the University of Strathclyde led to a
project in an area of social deprivation in Ayr (a town some 60 km to the south of Glasgow). The Ayr project involved CAAD workshops with pupils from a local Primary School. These workshops were part of an Arts Strategy which promoted the health centre and, through consultation with local people and school pupils, resulted in a mural design produced by a member of the Bellarmine Arts Association being included in the new health centre.

The project should be seen in the context of the City of Glasgow's strategy for the regeneration of areas of the city disadvantaged by a long period of decline and the subsequent loss of employment opportunities.

The focus of this paper is on one of the schools in the Gorbals area, St Francis Primary School, and how participatory workshops, including CAAD, were used to enable those pupils often excluded from cultural activities, to significantly increase their understanding of the process of art and design.

**Organisational Relationship Diagram**

**Aims and Educational Objectives**

The aims of the project were:

- to involve the pupils as agents for change in their school environment.
- to increase their understanding of the built environment, and the role of the artist, designer and architect in the design process in the context of changing the school environment.
- to identify and define a role for the artist/designer in a school environment beyond the function of teacher.
to explore the use of CAAD in the above process.

The art and environment project developed by the Bellarmine Arts Association and the CADET Unit of the University of Strathclyde is informed by current educational thinking as outlined in key documents produced by the Scottish Education Department. Some quotation taken from these documents follow:

"In the school, pupils will be taught ways of handling information through symbols such as numbers, signs, words, pictures and sounds. They will develop ways of thinking which will help them to understand the world around them. They will discover how to take control of their own learning, to make choices and to work with others, appreciating different points of view."
(The Structure and Balance of the Curriculum 5-14)

"Pupils' learning...is enhanced by awareness of the environment in its broadest sense."
(Environmental Studies 5-14)

"The expressive Arts emphasises particular ways of communicating with others... Positive attitudes to the need of others are also developed as pupils work together in collaborative activities."

"The expressive arts develops aesthetic awareness.....develops the imagination, makes children more sensitive and responsive to the natural and (built) environment, heightens critical awareness and contributes to the development of personal taste."
(Expressive Arts 5-14)

Clearly in addressing these issues, the visual arts, and in particular the creative use of CAAD has an important role to play in enabling people to participate in a meaningful and effective way as part of the process of the social and environmental regeneration of the city. CAAD combines practical reasoning with imaginative speculations and provides access to these for a wider community.

**Project Description**

The collaborative project based at St Francis Primary School featured a series of interactive workshops with pupils from Primary 5-7 (9-11 years of age). The physical outcomes of these workshops included paintings (both conventional and computer generated), drawings, sculpture, a design for a game, a learning garden, a patio area (partly executed), designs for external furniture and railings and some computer models. Examples of the pupils' artwork are shown in Figure 02 - Figure 05.

The project must also be seen in its context of its role within the overall urban regeneration of the area. The school has a contract with one of the key consultants in the process, the architects Elder and Cannon. They are to advise the school of overall physical changes to their environment, including reviewing the children's' ideas and assisting in selecting and achieving appropriate solutions. They also have contact with the architects Page and Park who are involved with new build and the redevelopment of a key listed building on two edges of the school.

Prior to the CAAD workshops a computer based model of the school was developed using 3D Studio. This ensured the children's immediate attention and enthusiasm as they were able to recognise their own school environment. Samples of artwork produced at previous workshops had also been scanned and had been converted into material texture maps ready for use.

The first series of workshops (Figure 06) explored with the children the possibility of mapping samples of their artwork onto a playground shelter. This allowed the
children to visualise what their paintings would look like if developed as murals. The results (Figure 07) of these exercises were so successful that a more complex exercise was undertaken based on the work of some of the art workshops.

As part of one of the art workshops the children were introduced to the work of Charles Rennie Mackintosh. Inspired by this the pupils were then encouraged to develop some of their own artwork. Some of the resultant designs were then developed by the same pupils using 3D Studio. The process involved the pupils drawing the various shapes using the freehand tool in the 2D Shaper and then performing a simple extrusion on the shapes in 3D Lofter. Colours were then applied and the models were rendered. With limited guidance it was possible for the pupils to perform these task successfully. (Figure 08 and Figure 09).

The process was developed further to create some 3D models of the pupils furniture designs for their patio. The computer models were then merged into the computer model of the school to show how they would look in context. The rendered images of the furniture were also collaged using basic photomontage techniques in Paintshop Pro. The results were very successful (Figure 10 - Figure 12).

The benefits are not limited to the urban regeneration, the children participating in the project have also benefited directly from the experience. A pupil with ability in the visual arts who was experiencing low achievement through difficulty in focusing on his studies showed particular aptitude in CAAD. On one day in particular the pupil had been disruptive in class prior to the CAAD workshop, but was very attentive and well behaved throughout the workshop applying a great deal of concentration to the task in hand. This was particularly noticed by both class and head teacher and supported by the visiting artist.

Parallel Student Work

In parallel with the interactive CAAD workshops, undergraduate students were involved in a design project situated in the heart of the Gorbals. They had to produce an urban study and a kindergarten design on a site of their own choice. Some chose to develop sites adjacent to the school and were involved in visits to the school and a dialogue with the pupils. One of the designs, based on the elements of sun, water and wind, was conceptualised in 3D on the computer without any prior conventional drawings or models. (Figure 13 - Figure 16).

Conclusions

At first sight the use of CAAD is somewhat unremarkable, however it is how it is used in the context of urban regeneration that is important. Peter Hall stated in Europe 2000, "The communication of information - of 'knowledge' in the widest meaning of the word - will represent a problem to the European of the twenty-first century; and this will be due paradoxically to the enormously enhanced capability he will possess in this field." The visual arts, and in particular the creative use of CAAD has an important role to play in enabling people to participate in a meaningful and effective way as part of the process of the social and environmental regeneration of the city.

The rapid changes in the development in the Gorbals in the past has resulted in significant failures. What is needed, if the participatory process in community architecture is to be effective is a common language and method of debate at a local level. Through the use of CAAD at all levels we have attempted, with some success, to contribute to that debate.

The success of the project has already created further interest and opportunities within the city of Glasgow, and in particular through the Gorbals Umbrella Group. It is intended to develop the use of CAAD further by introducing the CAAD interactive workshops earlier in the process, i.e. in parallel with some of the more
conventional art workshops.

**References**

*The Structure and Balance of the Curriculum 5 - 14*, The Scottish Education Department, 1993

*Environmental Studies 5 - 14*, The Scottish Education Department, 1991

*Expressive Arts 5 - 14*, The Scottish Education Department, 1991


Smart, Aileen, *Villages of Glasgow Volume 2*, John Donald, Edinburgh 1996


**Figures**

![Map of Glasgow Central Business District](http://10.130.10.2/ecaade1997/wood/wood.htm)
Figure 01 - Strategic Location
Gorbals Working Group Annual Report 1995
CAAD as a Dialogic Tool.
Figure02 - Detail of Seat
Figure03 - Detail of Fence
Figure04 - Design for Garden (Computer Based)
CAAD as a Dialogic Tool.
CAAD as a Dialogic Tool.
CAAD as a Dialogic Tool.

Figure 07 - Artwork as a Mural
CAAD as a Dialogic Tool.

Figure 08 - Bird

Figure 09 - Flower
Figure 10 - Design for a Garden Seat
Figure 11 - Seat in Computer Model
CAAD as a Dialogic Tool.

Figure 12 - Garden Seat on Patio
Figure 13 - Sun Module
CAAD as a Dialogic Tool.

Figure 14 - Water Module
Figure 15 - Wind Module
Figure 16 - Wind Module (developed)